



Editorial

Effective laboratory teaching

Practical work has an important and time-honored place in the education of students, researchers and engineers. The practical work is the most expensive part of the education. The major goals of practical work are: (i) teaching manual and observational skills relevant to the subjects; (ii) improving understanding of methods of scientific enquiry; (iii) developing problem solving skills; and (iv) nurturing professional attitudes.

Most of us hope that our students will develop a commitment to the subject taught and that they will incorporate its values into their thinking and future actions. Practical work can, and should, provide opportunities for such attitudes to grow.

The main principle underlying laboratory work is that students learn effectively through doing practical tasks (learning by doing). But the principle 'Learning by Doing' needs two qualifications: First, the tasks have to be perceived as relevant and meaningful by the students--otherwise the interest and learning may be minimal. Second, students (and lecturers too) have to receive constructive feedback on their performance to improve the learning. Practice does not itself make perfect but practical work with appropriate feedback almost always improves performance. These points should be borne in mind when designing laboratory course and marking laboratory work.

Laboratory teaching often involves giving brief explanations and instructions to the whole class and then dividing class into pairs or small groups who work on a particular experiment, which means that laboratory teachings is a kind of small group teaching. The instructor has to create interest, explain technical information, ask the students the right questions, exercise control, adjust performance of students and assess the students' performance. Most important of all, we need to put ourselves in the place of the students, so we can choose the appropriate experiments, give the right instructions and make laboratory work into a challenging and rewarding experience for reaching set outcomes of the course.

Laboratory teaching also involves skills concerned with giving directions, with helping demonstrators and technicians, and with designing, organizing, and implementing laboratory work.

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